

Treating the Elderly with Diabetes: Unanswered Questions



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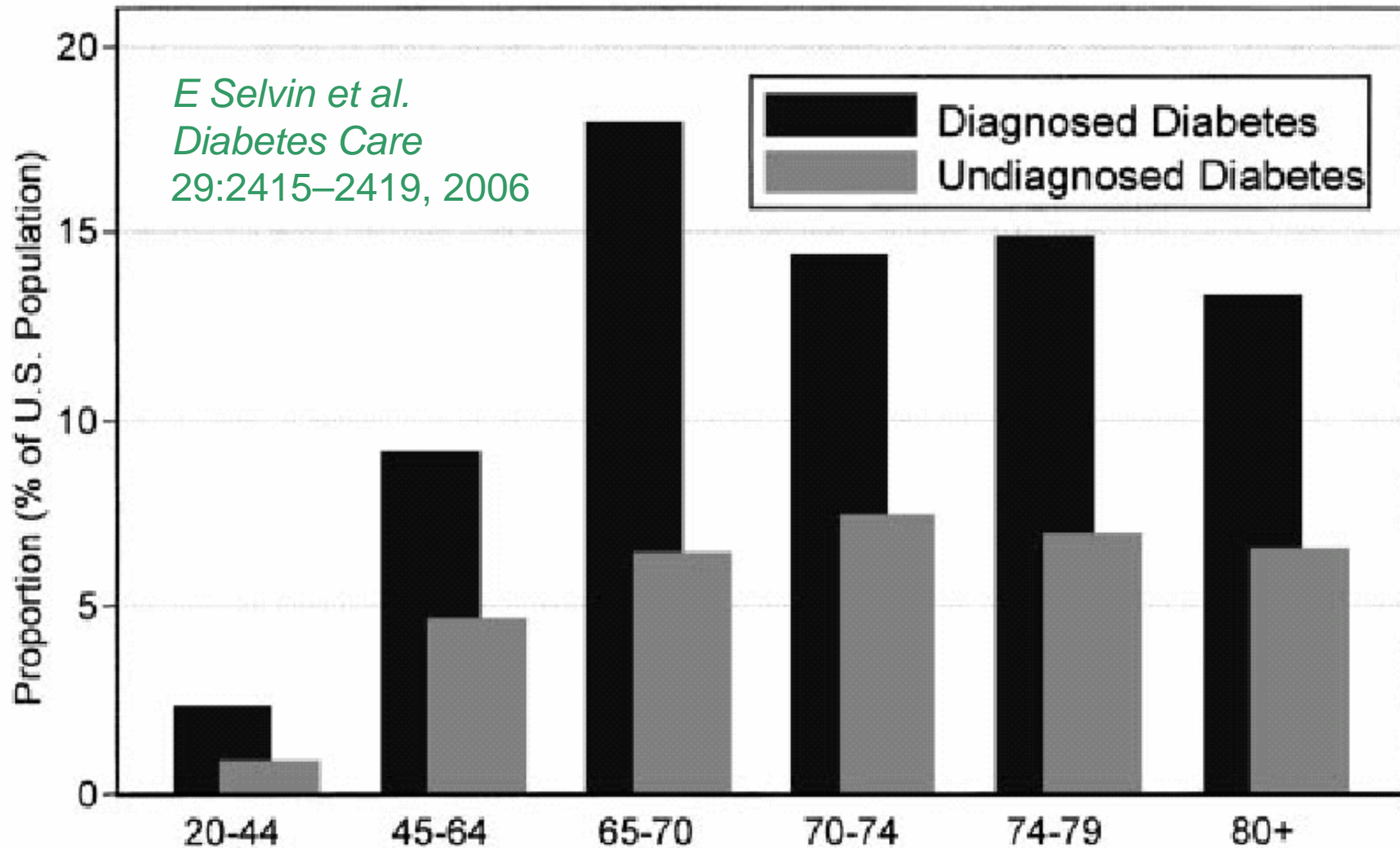
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Presented at the DMICC Conference on “Opportunities for Diabetes Clinical Research”, January 18, 2007, Natcher Conference Center, Bethesda, MD

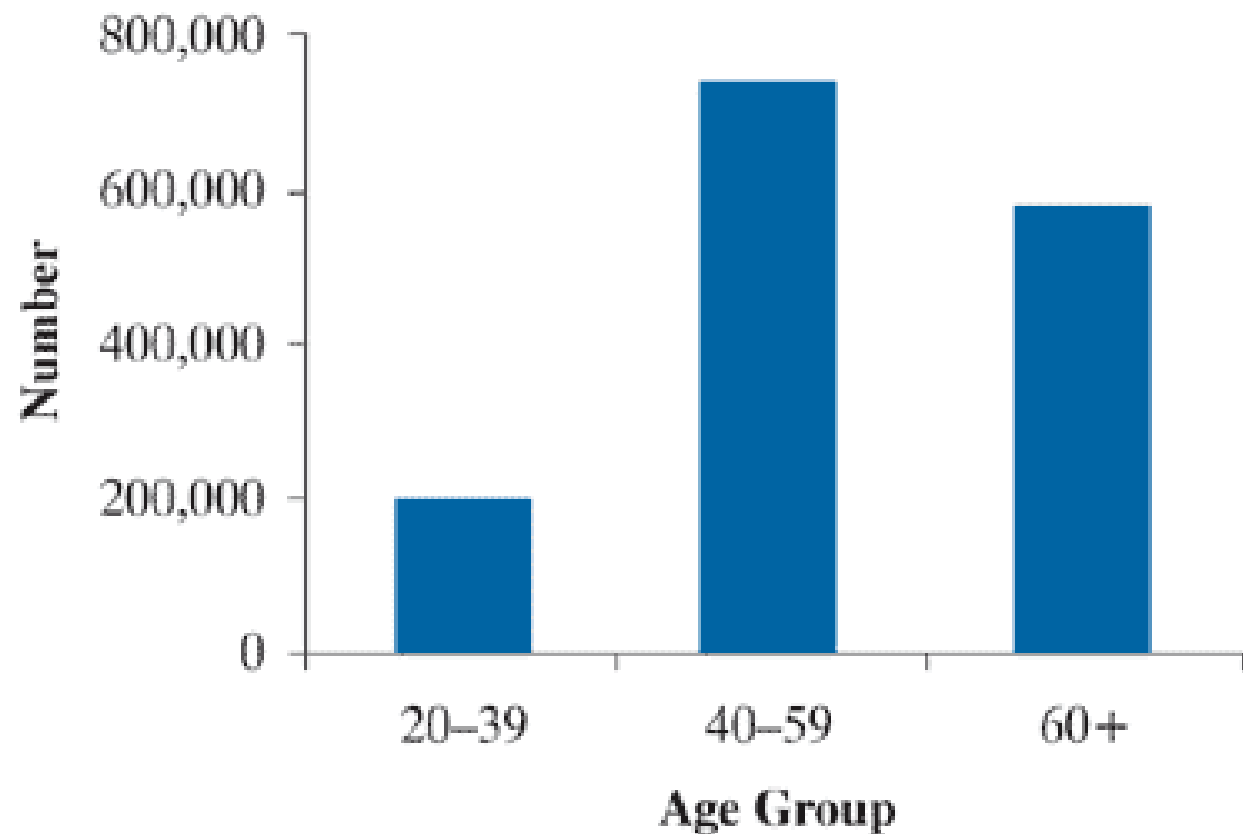
Diabetes & Aging Conference 2001 - NIDDK, NIA, DMICC
Prevention & Treatment Work Group Report

- When should treatment start?
- How aggressively to treat glycemia?
- Right end-point: death, function, QOL?
- Can polypharmacy risk be reduced?
- Can informatics improve care?
- How to better tailor treatment?
- Is lifestyle mod effective in elders?
- Is OGTT screening useful?

Prevalence of Diagnosed & Undiagnosed Diabetes by Age, NHANES, 1999–2002



Estimated number of new cases of diagnosed diabetes in people aged 20 years or older, by age group—United States, 2005

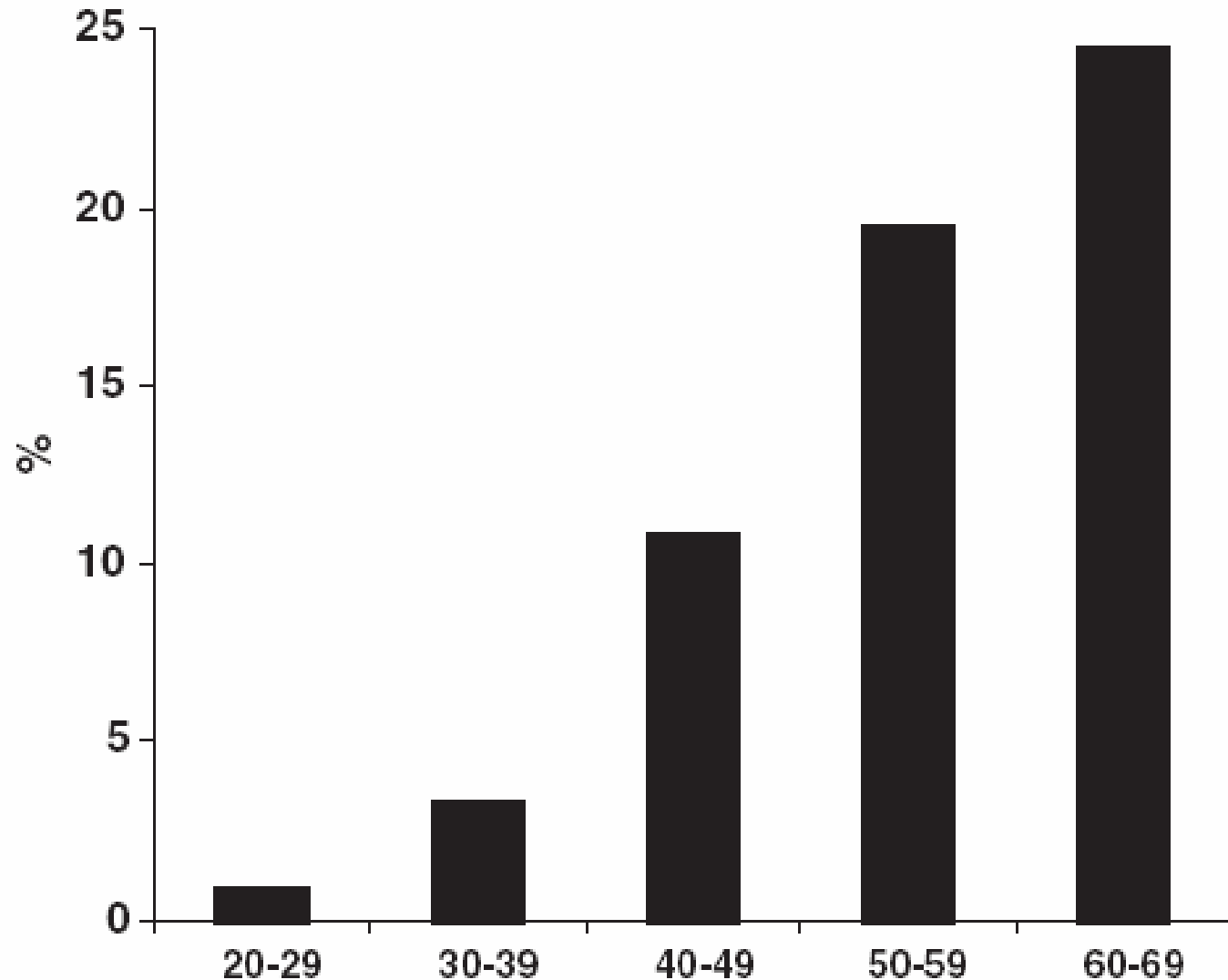


Source: 2001–2003 National Health Interview Survey estimates projected to year 2005.

<http://diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm#11>

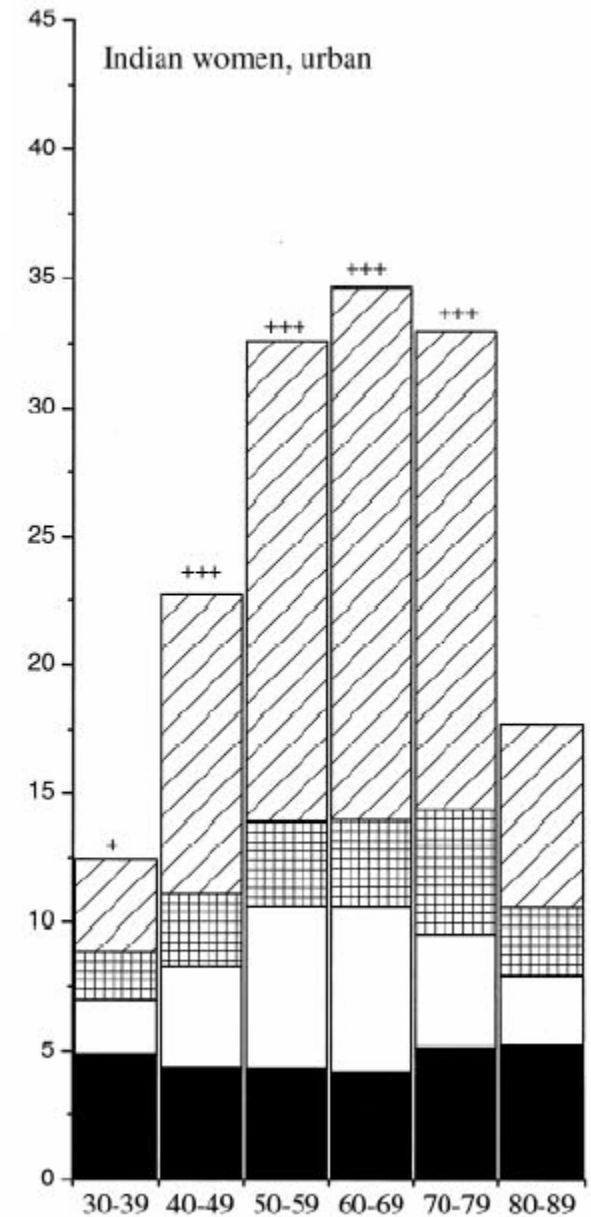
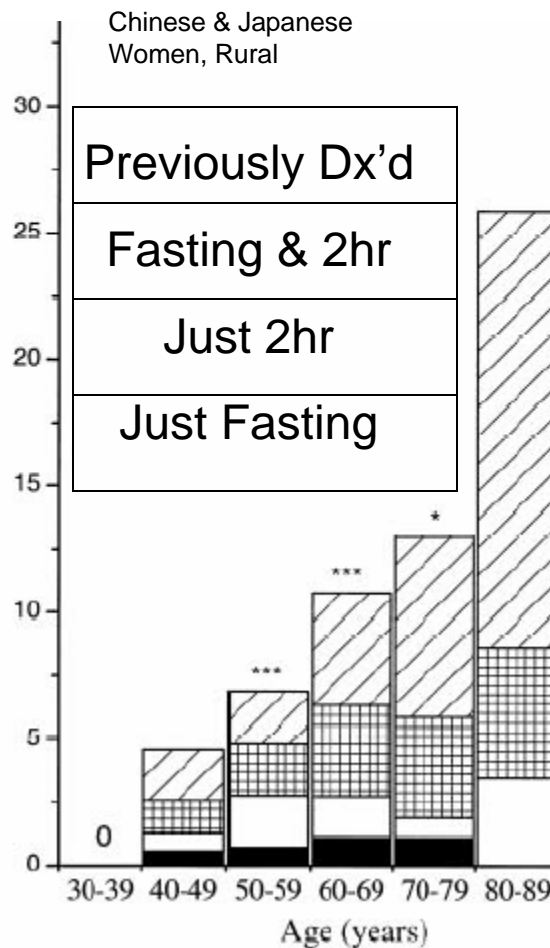
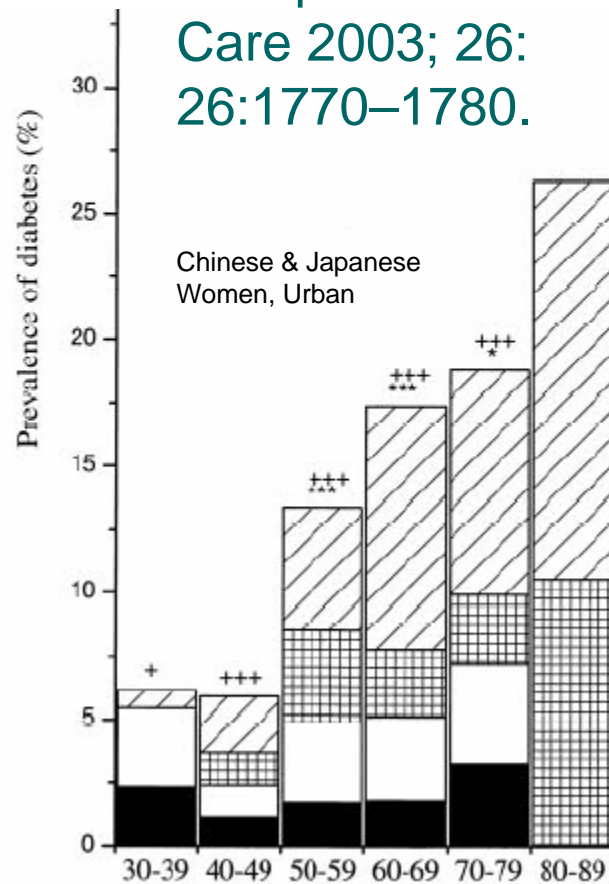
Prevalence of Diabetes Mellitus in Mexico by Age, National Survey of Chronic Disease

JA Rull et al.
Arch Med
Res 2005;
36: 188–196

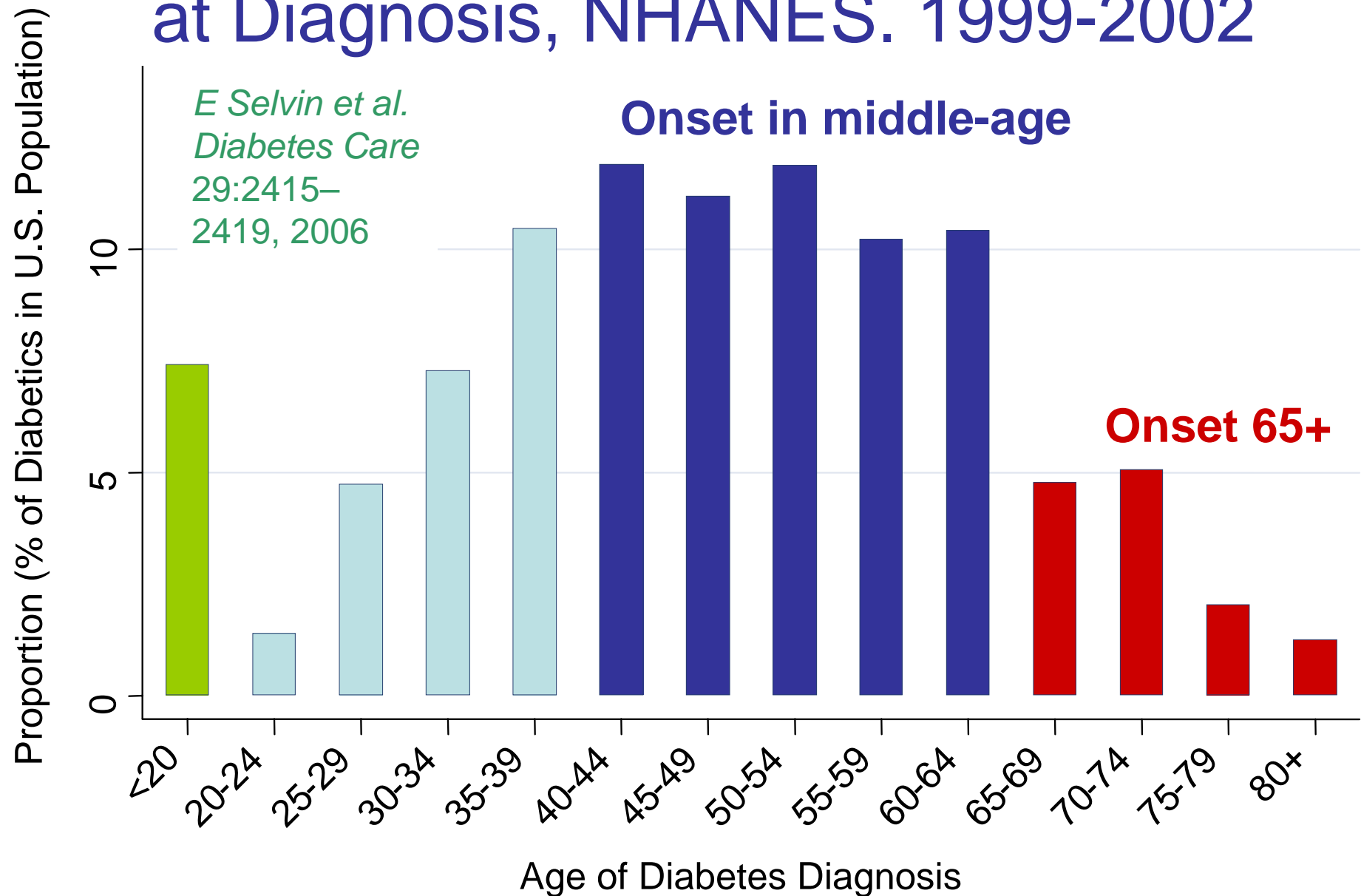


Prevalence of Diabetes Mellitus in Selected Populations of Asian Women Aged 30-89

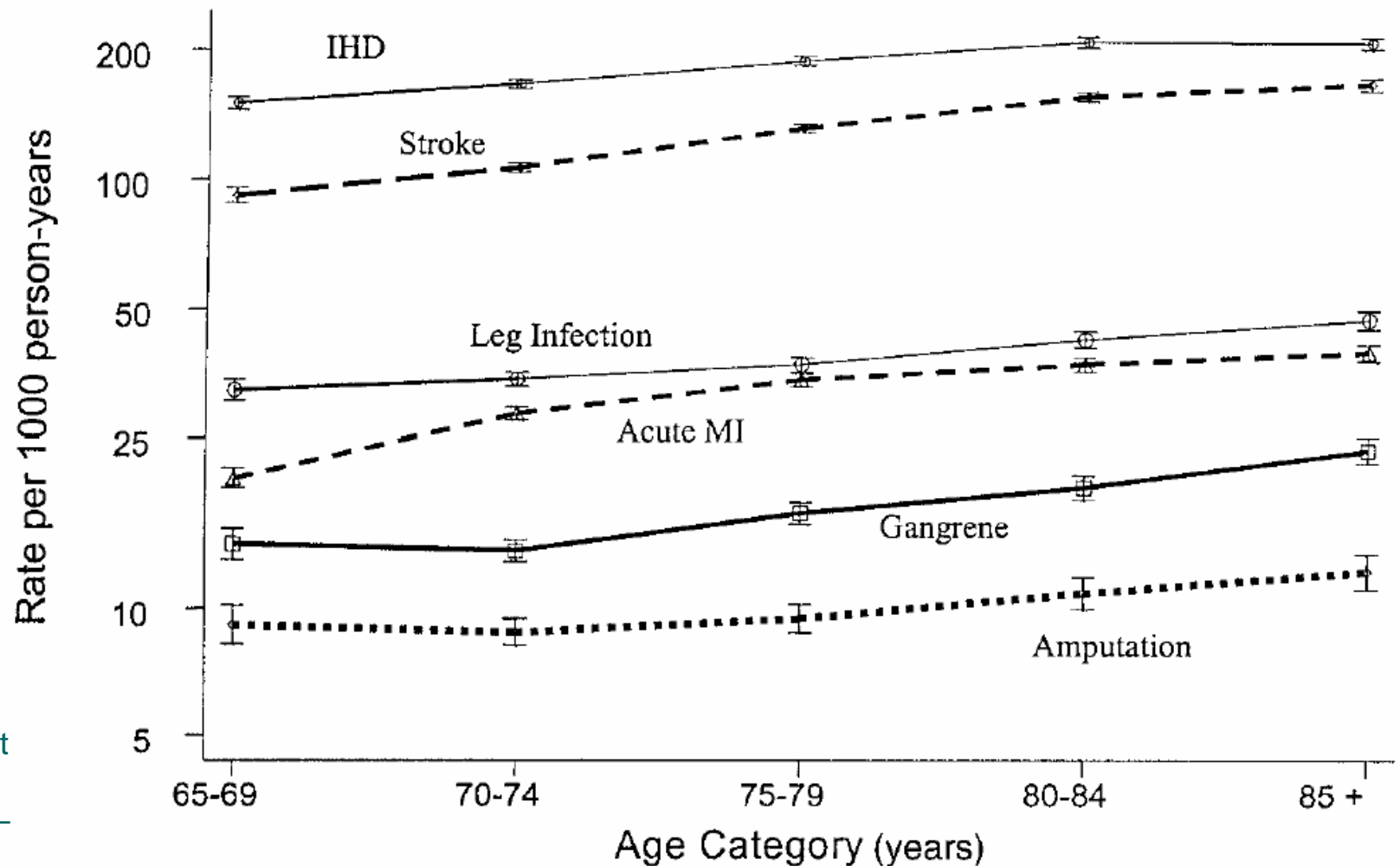
Decoda Study
Group. Diabetes
Care 2003; 26:
26:1770–1780.



Distribution of Diabetes Mellitus by Age at Diagnosis, NHANES. 1999-2002



Rates of Hospitalization for Selected Complications in 148,562 Medicare Beneficiaries, 1994-95 (log-scale)



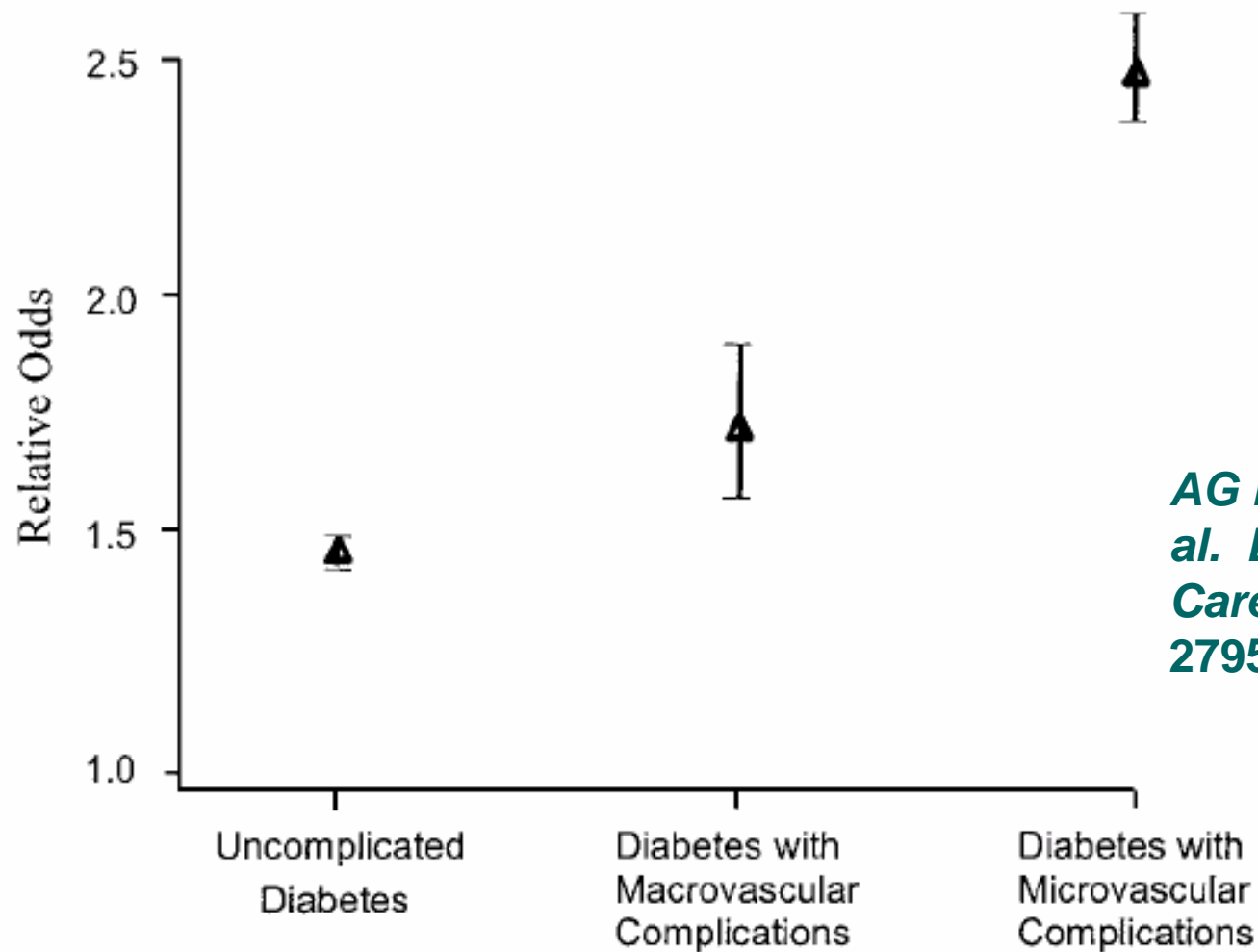
Prevalence & Incidence of CHF in 1994-1999 in Diabetic US Adults Aged >65 years in Medicare

AG Bertoni et al.
Diabetes Care
27:699–703, 2004

Demographic group	Prevalent heart failure in 1994	Incident heart failure during 1995–1999
<i>n</i>	151,738	115,803
All	22.3	12.6
Men	21.2	12.5
Women	23.0	12.7
Whites	22.4	12.8
Blacks	22.6	12.8
Age 65–69 years	15.7	8.4
Age 70–74 years	19.6	9.8
Age 75–79 years	23.8	12.2
Age 80–84 years	29.6	15.8
Age ≥ 85 years	37.4	20.5

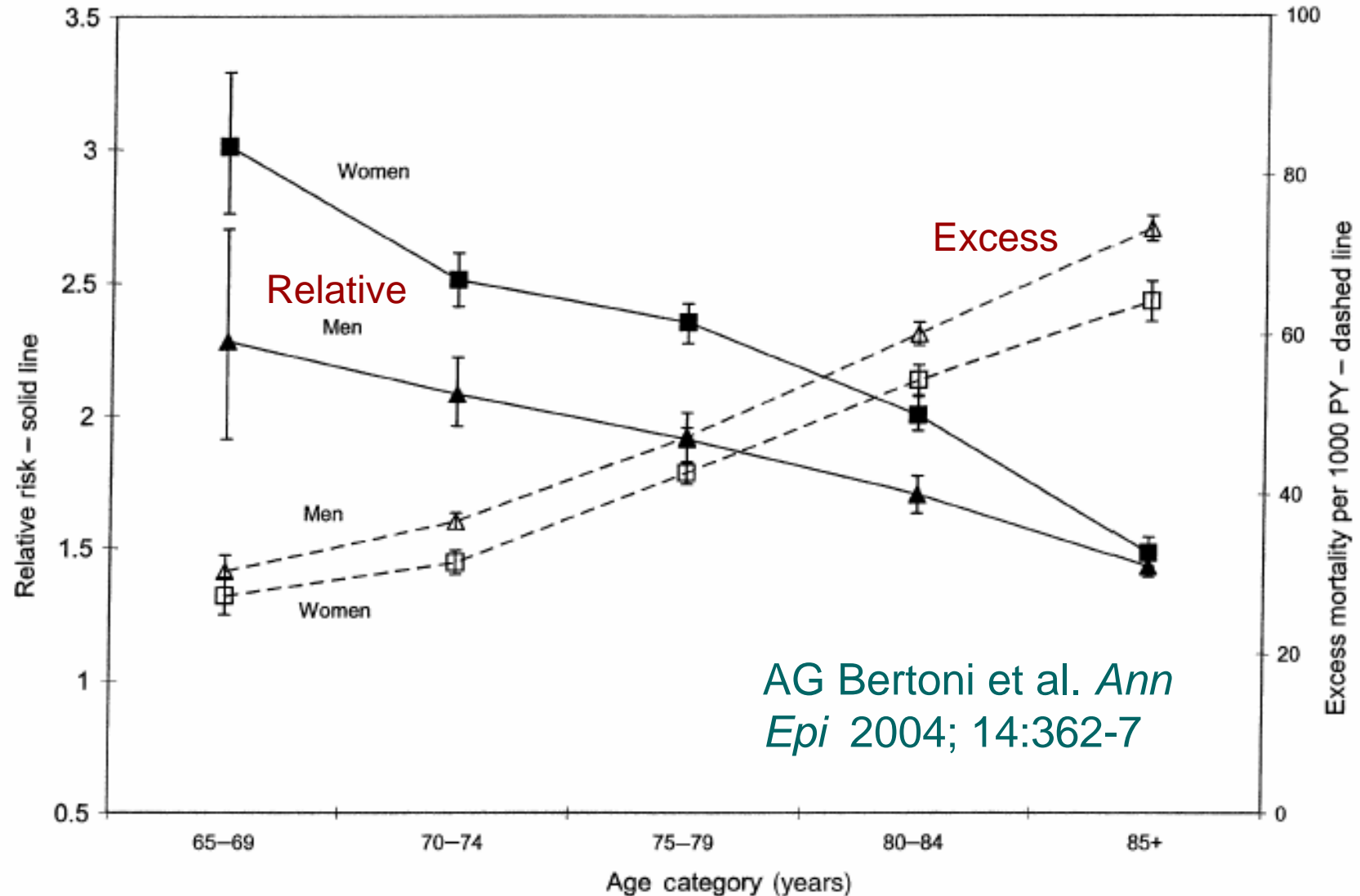
Data are % (prevalence) or rate per 100 person-years (incidence) by demographic group.

Relative Odds of Idiopathic Cardiomyopathy Associated with Diabetes in a Nationwide Study of 44,837 Cases and 450,254 Controls, 1988-95



AG Bertoni et al. Diabetes Care 26: 2791–2795, 2003

Relative Risk of Death & Absolute Excess Mortality Associated with Diabetes Mellitus in Medicare Beneficiaries



Care of the Older Person with Diabetes, CHF/AGS 2003

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

Six Geriatric Syndromes

- Polypharmacy
- Depression
- Injurious Falls
- Urinary Incontinence
- Cognitive Impairment
- Neuropathic Pain

Standards of Care for Older Individuals, ADA 2007

- No long-term studies in >65 age group
- Higher risk for death, disability, conditions of aging
- Comorbidity, function, life expectancy all variable
- If expectancy >10 yrs & not frail → Rx as if younger
- Multi-disciplinary approach to improve glycemia
- May be more important to focus on BP
- If ill from diabetes or other diseases → Back off
- Greater risk for hypo; Less likely to enjoy benefits
- Consider elevated adverse effect risk from all Rx

http://care.diabetesjournals.org/cgi/reprint/30/suppl_1/S4

Selected Clinical Characteristics of Elderly Adults With and Without Diabetes, NHANES 1999-2002

E Selvin et al. Diabetes Care
29:2415–2419, 2006

	No diabetes	Middle age–onset diabetes	Elderly onset diabetes	P value*
n	2,344	272	193	
Mean fasting glucose (mg/dl)	105.4 ± 1.2	172.4 ± 11.1	132.3 ± 6.1	0.001
▶ Mean A1C (%)	5.6 ± 0.02	7.4 ± 0.1	6.9 ± 0.2	0.011
A1C >7%	2.1 ± 0.4	59.9 ± 4.2	41.6 ± 4.5	0.005
A1C >8%	0.9 ± 0.3†	27.9 ± 4.7	20.2 ± 4.6	0.149
Mean age at diagnosis of diabetes (years)‡	—	53.2 ± 0.7	71.8 ± 0.5	<0.001
Years since diagnosis of diabetes‡				
>10 years	—	76.7 ± 3.8	10.9 ± 3.2	<0.0001
5–10 years	—	17.6 ± 3.8	24.1 ± 4.7	0.3490
<5 years	—	5.7 ± 1.8	65.0 ± 5.5	<0.0001
Glucose-lowering medication use‡				
No medication	100	9.0 ± 2.8	22.5 ± 3.8	0.1327
▶ Insulin use	—	31.7 ± 4.7	6.9 ± 1.3	<0.0001
Oral medication use	—	45.6 ± 4.2	67.5 ± 4.6	0.8319
Both insulin and oral	—	13.7 ± 2.7	3.2 ± 1.6	0.0004
History of cardiovascular disease	19.6 ± 1.3	36.1 ± 4.0	34.7 ± 4.5	0.817
History of stroke	7.8 ± 0.8	14.0 ± 3.3	11.4 ± 2.9	0.596
History of coronary heart disease	14.0 ± 1.1	30.1 ± 4.4	28.2 ± 4.4	0.754
Peripheral arterial disease	12.0 ± 1.0	22.4 ± 6.5	18.4 ± 4.1	0.584
Peripheral neuropathy	21.5 ± 1.3	35.5 ± 6.1	37.1 ± 6.0	0.855
▶ History of retinopathy‡	—	39.4 ± 4.3	12.6 ± 3.6†	<0.0001

Selected CVD Risk Factors in Elderly Adults With and Without Diabetes, NHANES 1999-2002

CVD Risk Factor	No DM	Diabetes, Age of Onset		P-Value
		40-64	65+	
Current Smoking, %	9.8	10.0	7.5	0.221
▶ Hypertension, %	70.1	84.1	82.8	0.807
▶ Treated for HTN, %	46.0	71.7	59.3	0.001
▶ Sys BP, treated, mmHg	145	142	140	0.696
▶ Sys BP, untreated, mmHg	156	150	153	0.367
Hypercholesterolemia, %	51.7	55.3	45.4	0.220
Total Chol, treated, mg/dL	222	205	204	0.898
Total Chol, untreated, mg/dL	261	273	260	0.167

Care of the Older Person with Diabetes, CHF/AGS 2003 - I

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

- Offer daily ASA, if not anticoagulated (IB) ◀
- If a smoker, offer cessation advice (IIA)
- If hypertensive....
 - Target 140/80 (IA) or 130/80 (IIA) mmHg
 - Rx hypertension gradually (IIIA)
 - If sysBP 140-160 & dias BP <100, rx in 3 mo (IIIB)
 - If sys BP >160 or dias BP >100, rx in 1 mo (IIIB)
 - If on ACEI or ARB, monitor SCr & K (IIIA)
 - If on diuretic, monitor electrolytes (IIIA)

Care of the Older Person with Diabetes, CHF/AGS 2003 - II

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

- If healthy & functional, target A1c $\leq 7\%$ (IIIB)
- If frail or ill, target A1c = 8% (IIIB)
- Monitor A1c q 6-12 months (IIIB)
- Consider self-monitoring in context (IIIB)
- If hypoglycemic severe or frequent, refer (IIB)
- Avoid chlorpropamide (IIA)
- Avoid metformin if SCr $> 1.4 - 1.5$ mg/dL (IIB)
- If on metformin, monitor Scr or CrCl (IIB)

Care of the Older Person with Diabetes, CHF/AGS 2003 - III

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

- If dyslipidemic...
 - Correct dyslipidemia, unless frail, ill (IA) ◀
 - Add pharmaco-rx if LDL-C >130 mg/dL (IIIB)
 - If statin, monitor ALT at 12 wks & change (IIIB)
 - If fibrate, monitor liver enzymes annually (IIB)
- Dilated eye exam at diagnosis (IB) ◀
and every 1-2 years thereafter (IIB)
- Screen for microalbumin at dx & annually (IIIA)
- Educate and reinforce (IA) ◀
- Review monitoring technique (IIIB)

Care of the Older Person with Diabetes, CHF/AGS 2003 - IV

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

- Screen for depression (IIA)
- If depressed, treat or refer in 2 wks (IIIB)
- Evaluate within 6 wks of initiation (IIIB)
- Counsel to keep updated med list (IIA)
- Review med list if depressed, fall, impaired (IIA)
- Screen for cognitive impairment (IIIA)
- If impaired, screen for cause (IIIA)

Care of the Older Person with Diabetes, CHF/AGS 2003 - V

<http://www.americangeriatrics.org/products/positionpapers/JAGSfinal05.pdf>

- Screen for urinary incontinence (IIIA)
- If incontinent, evaluate (IIIB)
- Ask about falls (IIIB)
- If falling, evaluate (IIIB)
- Assess for persistent pain (IIIA)
- Monitor & promote physical activity (IA) ◀
- Offer culturally appropriate MNT (IA) ◀
- Educate about medication use (IIIA)
- Educate about foot care (IB) ◀

Diabetes & Aging Conference 2001 - NIDDK, NIA, DMICC

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- *How aggressively to treat BP?*
- Right end-point: death, function, QOL?
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Diabetes Research in the Elderly: Technical Advantages

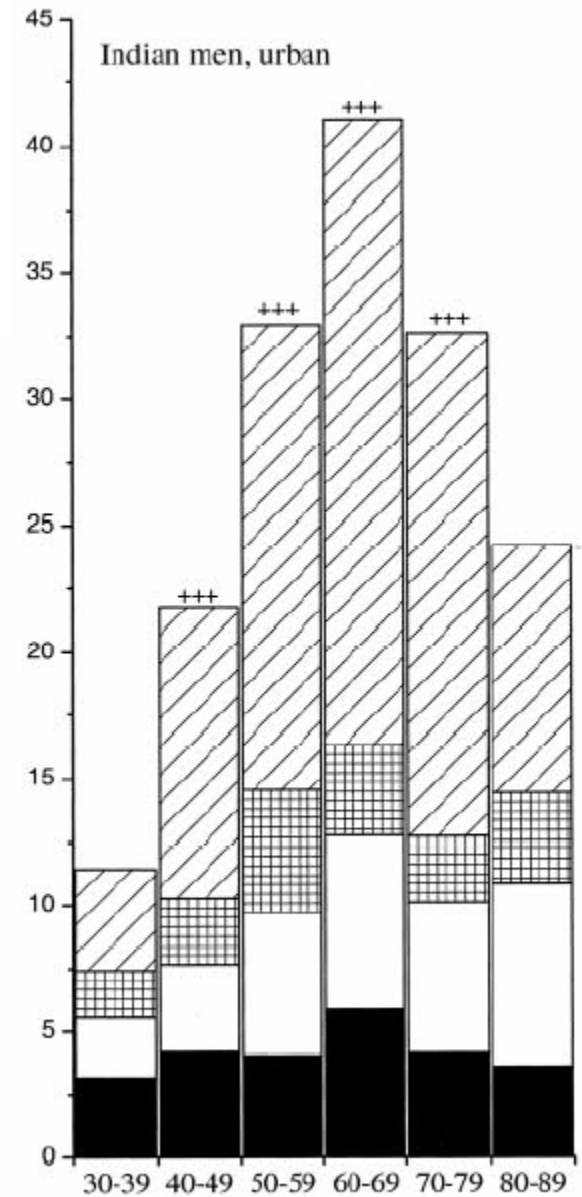
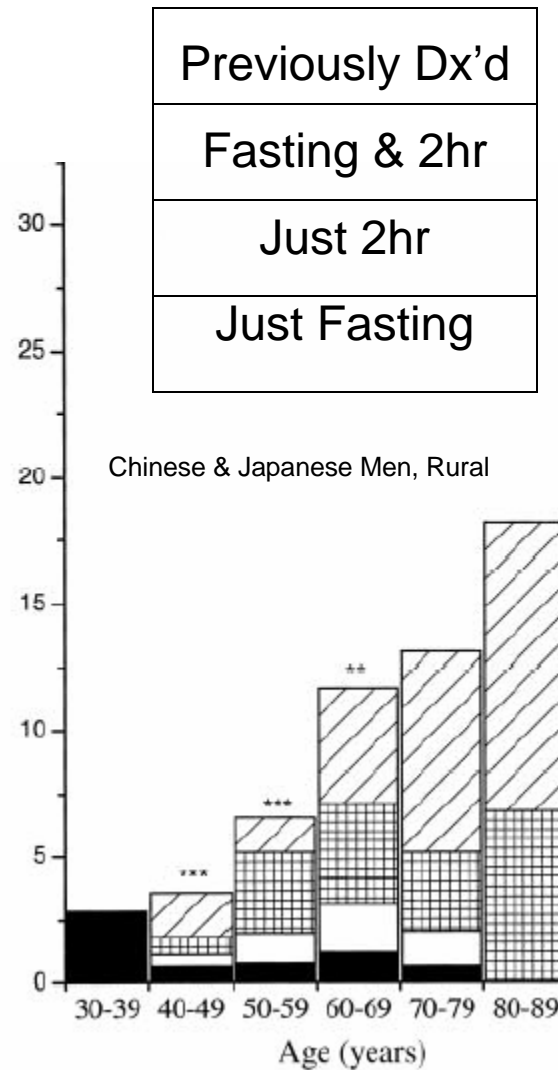
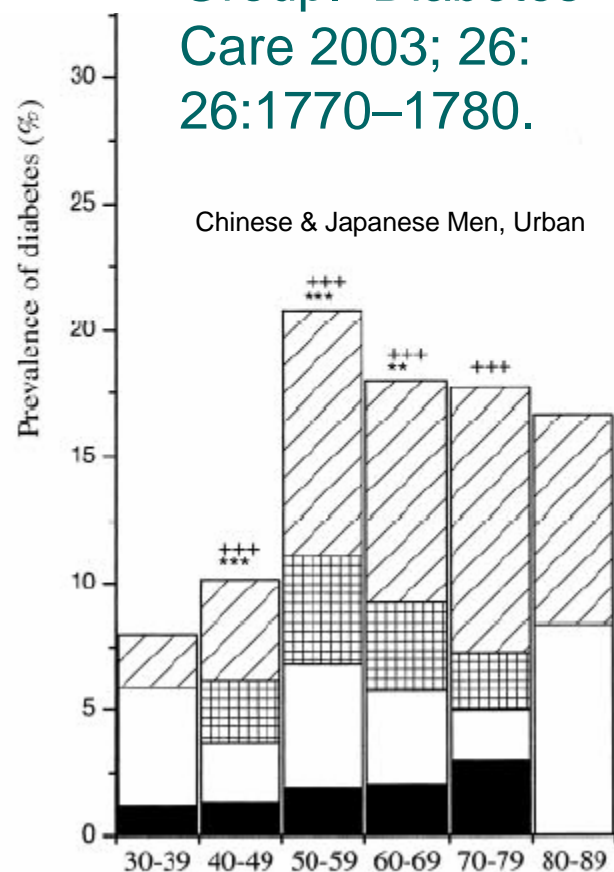
- NIH track record for recruitment
- NIH track record for behavior change
- More endpoints; More variety; Sooner
- Easier tracking via Medicare benefits
- Economic endpoints more compelling
- Partnership with CMS a possibility
- Few practices have been tested in RCT

Diabetes Research in the Elderly: Technical Disadvantages

- Comorbidity → Confounding, Complexity
- Clean test of simple intervention is difficult
- Higher risk of adverse effects

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Prevalence of Diagnosed Diabetes, United States Adults, by Age & Sex, NHIS, 2005

